Claims

1. An overcurrent protective relay for use in a power system, comprising:

means for obtaining current values from a power line, which values are adjusted for application to a processor; and

a processor for evaluating the adjusted current values with a preestablished response curve, wherein the preestablished response curve includes a combination of (a) an inverse time overcurrent curve portion in which, as fault current increases from a normal current value, the time to trip a circuit breaker for the power line decreases, and (b) a thermal limit curve, wherein the thermal limit curve crosses the time overcurrent curve at a selected current value, such that the thermal limit curve controls the time to trip the circuit breaker for fault current values greater than the preselected current value and the overcurrent curve controls the time to trip for fault current values less than the preselected current value.

2. The relay of claim 1, wherein the selected thermal limit curve is an I^2t curve.

3. The relay of claim 1, wherein the time overcurrent curve is characterized such that without the thermal limit curve, high fault currents will cause damage to the relay.

4. The relay of claim 1, wherein the thermal limit curve includes a feature of producing a trip signal at a selected speed when the current reaches a value which saturates an A/D converter portion of the relay.

5. The relay of claim 1, wherein the time overcurrent curve can be adjusted to change the response of the relay.